

## **ABSTRACT OF THE DISCLOSURE**

A reactor for CO control having a reactor vessel having a water-gas shift catalyst zone, a mixed catalyst zone downstream of the water-gas shift catalyst zone, and a methanation catalyst zone disposed downstream of the mixed catalyst zone, at least one water-gas shift catalyst disposed in the water-gas shift catalyst zone, at least one methanation catalyst disposed in the methanation catalyst zone, and a mixture of the water-gas shift catalyst and the methanation disposed in the mixed catalyst zone.

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